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Nepaliseta mirabilis, a remarkable new genus and species of Ctenostylidae (Diptera: Schizophora) from Nepal

by

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ABSTRACT

Nepaliseta mirabilis, a new genus and species of Ctenostylidae, is described from the Kathmandu region of Nepal. *Nepaliseta* gen. n. has affinities with *Ramuliseta* Keiser and *Furciseta* Aczél, although it is easily distinguished from these genera by the simple female arista and the laterally directed second and third antennal segments. The systematics of the Ctenostylidae are briefly discussed.

INTRODUCTION

The Ctenostylidae are a rarely encountered family of acalyptrate Diptera of uncertain phylogenetic affinities, although provisionally placed in the Tephritoidea (D. K. McAlpine 1990, Barraclough 1994). Ctenostylidae are very uncommonly encountered in collections, probably because they are usually collected only using light traps. The family is a morphological curiosity as included taxa lack both ocelli and a functional proboscis, while the arista is often dendritically branched in the female, and sexually dimorphic in form. An unusual biological feature of Ctenostylidae is that they are viviparous, although little is known about larval morphology or life history.

Ctenostylidae were previously known from only five species and eight genera (Barraclough 1994: 6). Four of the genera are restricted to tropical South America, with only three species of *Ramuliseta* Keiser, 1951, known from the Old World tropics (Africa, Madagascar and Indonesia). It was thus a surprise when Dr T. Wheeler (formerly of the University of Guelph, Canada) drew my attention to a single female of Ctenostylidae from Nepal, deposited in the Canadian National Collections in Ottawa. This specimen, described below as a new genus and species, considerably extends the known geographical range of the family, and is the first record from the northern part of the Oriental Region. The Nepalese specimen was collected at about 2000 m, which is comparable to the altitudes at which *Ramuliseta lindneri* Keiser, 1952, has been collected in montane East Africa (see Barraclough 1994).

The likelihood exists that ctenostylids are more widespread in tropical regions than previously thought, although they almost certainly do not occur in the Holarctic Region. Dr D. Yanega (*pers. comm.*) has seen an undescribed genus from the Philippines, and it is probable that the family occurs along the northwestern fringe of Australasia (Irian Jaya and Papua New Guinea) as well.

It is not yet possible to suggest a definite superfamily placement for the Ctenostylidae. This will have to await the collection of further material, particularly males.

MATERIALS AND METHODS

Reference should be made to the techniques discussed in Barraclough (1994). Antennal segment is abbreviated to A.s. in the descriptions.

TAXONOMY

Nepaliseta gen. n.

Etymology: Refers to Nepal, the only known provenance of the type species; the suffix *seta* is added because of the suggested affinity with *Ramuliseta* and *Furciseta*. Gender feminine.

Type species: *Nepaliseta mirabilis* sp. n., by present designation.

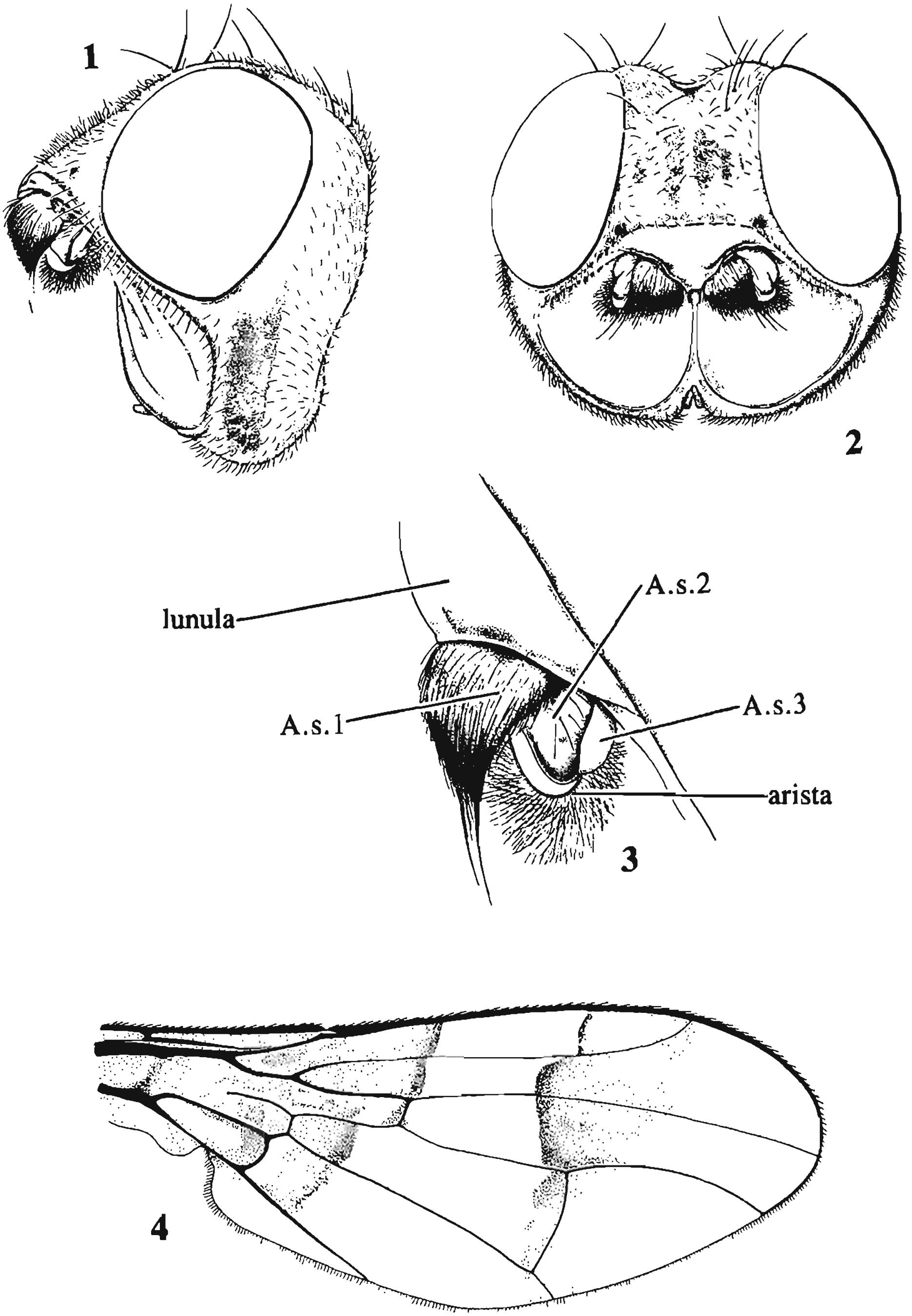
Description (based on female):

Head: Bristles on frons and upper occipital margin relatively well developed (Figs 1 & 2); incurved anterior fronto-orbital bristles absent. Lunula without vestiture, not excavate or sunken, width about 1.5 X length along mid-line (Fig. 2). Antenna and arista highly modified: A.s.1 somewhat reniform in frontoventral view; surface of upper two-thirds with dense and conspicuous cluster of ventrolaterally directed hairing (Figs 1–3). A.s.2 directed laterally from mid-height of first segment, length about twice width and shape as in Fig. 3. A.s.3 inconspicuous, of reniform appearance in dorsal view, visible length just less than half that of A.s.2 (Fig. 3). Arista emerging from deep depression along apical margin of A.s.3, length about equal to that of A.s.2 (Figs 1 & 3), arched laterally at first and then evenly curved medially towards base of A.s.2 (Figs 1 & 3); aristal hairing very dense, although individual hairs simple, hairs massed to produce feather-like sheen and arranged uniserially along apparent outer margin of arista (Figs 1–3). Facial region very extensive in frontal view (Fig. 2), expanded laterally on each side to largely obliterate parafacials (Fig. 2), appearance strikingly translucent and membranous, medially with very shallow carina (Fig. 2), this being dorsally terminated by conspicuous bulla butressed beneath the antennal bases and sharply pointed apical part of lunula.

Thorax: Prosternum narrowed to a sharp point at each lateral extremity, width 3.0-4.0 X length. Scutellum with 3 pairs marginal bristles, more apical 2 pairs closely approximated.

Wing (Fig. 4): Vein R_{2+3} without crossveins to costa and/or R_1. Veins R_{4+5} and M_1 parallel or slightly divergent from each other at junction with costa. Vein M_1 obviously incomplete basally, thus basal third of second basal cell open anteriorly. Alula and anal lobe moderately developed.

Discussion: The affinities of *Nepaliseta* gen. n. are clearly with *Furciseta* Aczél (Brazil) and *Ramuliseta* Keiser (Africa, Madagascar, Indonesia). As with these two genera, *Nepaliseta* lacks crossveins in the marginal cell of the wing, the lunula is without vestiture, the face has a median carina, the palpus is present and veins R_{4+5} and M_1 are not noticeably convergent. However, unlike both related genera, *Nepaliseta* has a simple (i.e. non dendritic) arista in the female. There is a single curved aristal axis with hairing along the lateral surface *in situ* (Fig. 2). Ctenostylid females typically have two or more aristal axes, and sometimes a complex dendritic branching (Barraclough 1994: 8; Hennig 1952: 607; Keiser 1951: 115, 120). The



Figs 1–4. *Nepaliseta mirabilis* sp. n., female holotype. 1–2. Head, showing all vestiture. 1. Profile. 2. Frontal view. 3. Antenna, dorsofrontal view. 4. Wing.

curious arched arista in *Nepaliseta* is reminiscent of that in *Tauroscypson* Curran, from Guyana (see Curran 1934: 531), although these genera do not have close affinity, and are otherwise easily distinguished. The laterally directed second and third antennal segments appear to be unique to *Nepaliseta* (female of *Ctenostylum* Macquart unknown).

Nepaliseta mirabilis sp. n.

Figs 1–4

Etymology: L. *mirabilis* = wonderful, strange; refers to the strikingly distinctive antenna and facial region.

Holotype ♀ : NEPAL: 'NEPAL, Ktmd. / Godavari, 6000' / 16.VIII.1967 / Mal. Tr., Can. Exp.'; 'Ramuliseta / sp / Det. / J. F. McAlpine 1975' [white card with black perimeter]; 'HOLOTYPE ♀ / Nepaliseta mirabilis / Barraclough, 1995' [red card with black perimeter]. In Canadian National Collections, Ottawa.

Male: Unknown.

Female: Dimensions (in mm): Body length 2.7 [2.7]; wing length 4.0 [4.0].

Colour: Head pale yellow to yellow-brown, except frons with irregular red-brown markings over much of width between posterior fronto-orbital and upper occipital bristles (this marking narrower medially) and anteriorly (a substantially larger marking which is broader medially) in front of anterior fronto-orbitals; anterior part of cheek also with irregular red-brown marking as in Fig. 1. Bristles of head pale to dark brown, those on A.s.1 noticeably dark brown; aristal hairing appearing silvery white. Thorax white to creamy yellow with darker yellow muscle insertions apparent beneath cuticle, but propleuron, parts of sternopleuron and hypopleuron irregularly red-brown; haltere cream, knob very slightly darker; scutum with darker yellow paired median and lateral vittae, median vittae narrow, closely approximated and extending three-quarters distance between anterior margin of scutum and scutoscutellar suture, lateral vittae twice width of median vittae and extending over posterior two-thirds of distance between anterior scutal margin and scutoscutellar suture. Thoracic bristles brown to dark brown. Legs with coxae and trochanters yellow to yellow-brown, femora white with apical half yellow, tibiae yellow with apical third to half white, tarsi entirely white. Wing veins yellow to yellow-brown, somewhat darker basally, membrane hyaline with conspicuous brown to dark brown infuscation as in Fig. 4. Abdomen white to pale yellow with tergite 1+2 and tergites 2–5 each with mid-line, posterior and lateral margins red-brown, tergite 6 entirely red-brown and segment 7 brown.

Head: Profile as in Fig. 1, facial region noticeably receded below prominent profrons. Buccal margin with numerous short bristles in profile (Fig. 1). Cheek depth subequal to eye height (Fig. 1). Occiput excavate at neck insertion. Frons noticeably wider anteriorly and medially excavate on posterior half (Fig. 2), width at mid-length about four-fifths maximum eye-width in dorsal view, fairly profusely haired over anterior one-fifth (Fig. 1). Parafacial with elongate hairs along much of length, longest hairs at mid-height, subequal in length to A.s.2 (Figs 1 & 2). A.s.1 with several elongate dorso-apical bristles, these about twice length of other dense hairing

(Figs 1–3). A.s.2 with inconspicuous setulae scattered over apparent dorsal surface (Fig. 3). Aristal vestiture long, maximum length almost reaching length of A.s.2 (Figs 1 & 3). Face with transparent lateral zones vertically grooved, tentorium easily visible within head.

Thorax/Wing: Pleuron with fairly profuse hairing over posterior part of mesopleuron, and some hairs on upper sternopleuron and on pteropleuron. 2 weak pairs postsutural dorsocentral bristles, 1 pair postalars and 1 pair notopleurals (anterior pair absent). Discal scutellar bristles/setulae absent. Tibiae broader along apical half, although hind tibia irregularly sinuous. Wing shape and venation as in Fig. 4.

Abdomen: Sternite 1 generally V-shaped, sclerotised mediobasal section relatively elongate, lateral extremities tapering to sharp points.

Discussion: I have not dissected the terminal postabdominal structures of the holotype. These are visible *in situ* and appear similar to those of *Ramuliseta lindneri* Keiser, 1952 (see Barraclough 1994: 11), although T9 is better developed with a broadly indented posterior margin. The shape and development of T9 and the fused cerci are unlikely to offer any characters of taxonomic value.

The holotype was collected using a Malaise trap, and appears to have been mounted from alcohol. It is thus possible that its colour is slightly different from freshly collected material.

The type locality 'Godavari' is in the Kathmandu Valley of central Nepal, just to the southeast of Kathmandu, alongside the Godavar River, which flows into the Baghmati River (Yanega, *pers. comm.*).

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REFERENCES

BARRACLOUGH, D. A. 1994. A review of the Afrotropical Ctenostylidae (Diptera: Schizophora: ?Tephritoidea), with redescription of *Ramuliseta lindneri* Keiser, 1952. *Annals of the Natal Museum* **35**: 5–14.

CURRAN, C. H. 1934. The Diptera of Kartabo, Bartica District, British Guiana, with descriptions of new species from other British Guiana loaclities. *Bulletin of the American Museum of Natural History* **66**: 287–532.

HENNIG, W. 1952. Bemerkenswerte neue Acalyptraten in der Sammlung des Deutschen Entomologischen Instituts (Diptera: Acalyptrata). *Beiträge zur Entomologie* **2** (6): 604–618.

KEISER, F. 1951. Die Unterfamilie der Lochmostyliinae (Dipt., Pyrgotidae) nebst Beschreibung einer neuen Gattung und Art aus dem indo-australischen Faunengebiet *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* **24** (1): 113–124.

MCALPINE, D. K. 1990. The taxonomic position of the Ctenostylidae (= Lochmostyliinae: Diptera: Schizophora). *Memorias do Instituto Oswaldo Cruz* **84** (1989): 365–371.

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